AMENDMENTS

In the Title:

Method and System for Dynamic Service Registration in a Data Communication System

In the claims:

31. (New) In a data communication system including a plurality of network devices, a method for providing dynamic services comprising the steps of:

receiving at a second network device a registration message from a first network device containing parameters associated with a plurality of capabilities of the first network device used for supporting at least one service device associated with the first network device;

configuring the second network device and a service server associated with the communication system with at least one deferred-session-based service for the service device;

associating a deferred-inactive-service identifier with the at least one deferred-session-based service, wherein the deferred-inactive-service identifier is used to activate the at least one deferred-session-based service at the later time; and

sending the deferred-inactive-service identifier to the first network device.

32. (New) The method of claim 31, further comprising the steps of:

receiving at the second network device from the first network device the deferred-inactive-service identifier;

responsive to the deferred-inactive-service identifier, activating the at least one deferred-session-based service between the session server and the service device; and

changing the deferred-inactive-service identifier to a deferred-active-service identifier.

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33. (New) The method of claim 32, further comprising the steps of:

receiving at the second network device from the first network device the deferred-active-service identifier;

responsive to the deferred-active-service identifier, deactivating the at least one deferred-session-based service between the session server and the service device; and

changing the deferred-active-service identifier to a deferred-inactive-service identifier.

34. (New) In a data communication system including a plurality of network devices, a method for providing dynamic services comprising the steps of:

sending from a first network device to a second network device a registration message containing parameters associated with a plurality of capabilities of the first network device used for supporting at least one service device associated with the first network device, wherein a deferred-inactive-service identifier is associated with the at least one deferred-session-based service, and wherein the deferred-inactive-service identifier is used to activate the at least one deferred-session-based service at the later time; and

receiving at the first network device from the second network device the deferred-inactive-service identifier.

35. (New) The method of claim 34, further comprising the steps of:

sending to the second network device from the first network device the deferred-inactive-service identifier; wherein in response to the deferred-inactive-service identifier, the at least one deferred-session-based service between the service server and the service device is activated; and wherein the deferred-inactive-service identifier is changed to a deferred-active-service identifier.

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36. (New) The method of claim 35, further comprising the steps of:

sending to the second network device from the first network device the deferred-active-service identifier; wherein responsive to the deferred-active-service identifier, the at least one deferred-session-based service between the service server and the service device is deactivated; and wherein the deferred-active-service identifier is changed to a deferred-inactive-service identifier.

37. (New) In a data communication system including a plurality of network devices, a method for providing dynamic services comprising the steps of:

a second network device receiving a first message from a first network device, wherein the first message includes parameters associated with a plurality of capabilities of the first network device used for supporting at least one deferred-session-based service between a service server associated with the data communication system and a service device associated with the first network device;

extracting the parameters from the first message;

creating a service-session profile for the at least one deferred-session-based service, wherein the service-session profile includes one or more of the parameters;

using the service-session profile to configure the service server and the second network device for the at least one deferred-session-based service for activation at a later time;

associating the service-session profile with a deferred-inactive-service identifier, wherein the deferred-inactive-service identifier is used to activate the at least one deferred-session-based service at the later time; and

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sending the deferred-inactive-service identifier to the first network device in a second message.

38. (New) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim 37.

39. (New) The method of claim 37, wherein the first network device is a cable modem and the second network device is a cable modem termination system.

40. (New) The method of claim 37, wherein the deferred inactive service identifier is a Medium Access Control Protocol service identifier.

41. (New) The method of claim 37, wherein the parameters include any of quality-of-service, class-of-service, type-of-service or voice service parameters.

42. (New) The method of claim 37, wherein the first message is a registration message and the second message is a registration response message.

43. (New) The method of claim 37, wherein the deferred-inactive-service identifier is encoded in a Type-Length-Value format.

44. (New) The method of claim 37, further comprising the steps of:

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the second network device receiving from the first network device a service request to activate the at least one deferred-session-based service, wherein the service request includes the deferred-inactive-service identifier;

responsive to the deferred-inactive-service identifier, activating the at least one deferred-session-based service between the session server and the service device; and

changing the deferred-inactive-service identifier to a deferred-active-service identifier.

45. (New) The method of claim 37, further comprising the step of generating a service event on the service server to request activation of the at least one deferred-session-based service, wherein the step of generating a service event occurs prior to activation of the at least one deferred-session-based service.

46. (New) The method of claim 44, wherein the service server is any of a Remote Authentication Dial In User Server, a Voice over Internet Protocol server, Asynchronous Transport Mode Server, Frame Relay Server, or an Integrated Services Digital Network server, or an Asymmetric Digital Subscriber Line server.

47. (New) The method of claim 45, wherein the step of generating a service event includes generating any of an authentication, authorization or an accounting event.

48. (New) The method of claim 37, further comprising the steps of:

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the second network device receiving from the first network device a service request to deactivate at least one deferred-session-based service, wherein the service request includes the deferred-active-service identifier;

generating a service event on the service server to request deactivation of the desired service;

deactivating the at least one deferred-session-based service; and

changing the deferred-active-service identifier to a deferred-inactive-service identifier.

49. (New) In a data communication system including a plurality of network devices, a method for providing dynamic services comprising the steps of:

a second network device receiving from a first network device a service request to activate at least one deferred-session-based service between a service server associated with the data communication system and a service device associated with the first network device, wherein the service request includes a deferred-inactive-service identifier associated with the at least one deferred-session-based service;

responsive to the deferred-inactive-service identifier, generating a service event on the service server to request activation of the at least one deferred-session-based service;

activating the at least one deferred-session-based service using a previously created service-session profile associated with the deferred-inactive-service identifier; and

changing the deferred-inactive-service identifier to a deferred-active-service identifier.

50. (New) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim 53.

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51. (New) The method of claim 49, wherein the first network device is a cable modem and the second network device is a cable modem termination system.

52. (New) The method of claim 49, wherein the deferred-inactive-service identifier is a Medium Access Control Protocol service identifier and the deferred-active-service identifier is a Medium Access Control Protocol Service identifier.

53. (New) The method of claim 49, wherein the step of generating a service event includes generating any of an authentication, authorization or an accounting event.

54. (New) The method of claim 49, wherein the service server is any of a Remote Authentication Dial In User Server, a Voice over Internet Protocol server, Asynchronous Transport Mode Server, Frame Relay Server, an Integrated Services Digital Network server, or an Asymmetric Digital Subscriber Line server.

55. (New) The method of claim 49, wherein the service request is a Voice over Internet Protocol off-hook request.

56. (New) In a data communication system including a plurality of network devices, a method for providing dynamic services comprising the steps of :

a second network device receiving from a first network device a service request to deactivate at least one deferred-session-based service occurring between a service server

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associated with the data communication system and a service device associated with the first network device, wherein the service request includes a deferred-active-service identifier;

responsive to the deferred-active-service identifier, generating an event on the service server to request deactivation of the at least one deferred-session-based service;

deactivating the at least one deferred-session-based service; and

changing the deferred-active service identifier to a deferred inactive service identifier.

57. (New) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim 56.

58. (New) The method of claim 56, wherein the deferred-active-service identifier is a Medium Access Control Protocol service identifier and the deferred-inactive-service identifier is a Medium Access Control Protocol service identifier.

59. (New) The method of claim 56, wherein the service request is a Voice over Internet Protocol on-hook request.

60. (New) In a data communication system including a plurality of network devices, a method for providing dynamic services comprising the steps of:

a first network device sending to a second network device a service request to activate at least one deferred-session-based service between a service server associated with the data communication system and a service device associated with the first network device , wherein

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the service request includes a deferred-inactive-service identifier associated with at least one deferred-session-based service; and

the first network device receiving from the second network device a service notification from the service server indicating that the at least one deferred-session-based service has been activated.

61. (New) A computer readable medium having stored therein instructions for causing a central processing unit to execute the methods of claim 60.

62. (New) In a data communication system including a plurality of network devices, a method for providing dynamic services comprising the steps of:

a first network device sending a service request to a second network device to deactivate at least one deferred-session-based service between a service server associated with the data communication system and a service device associated with the first network device, wherein the service request includes a deferred-active-service identifier associated with the at least one deferred-session-based service; and

the first network device receiving a service notification from the service server indicating that the at least one deferred-session-based service has been deactivated.

63. (New) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim 62.

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64. (New) A system for providing dynamic services to a network device in data communication system, the system comprising in combination:

a second network device for providing at least one deferred-session-based service between a service device associated with a first network device and a service server associated with the data communication system;

a service-session profile including parameters associated with a plurality of capabilities of the first network device used for supporting at least one deferred-session-based service between a service server associated with the data communication system and a service device associated with the first network device, wherein the service-session profile is used by the service server for configuring the second network device and the service server for at least one deferred-session-based service;

a deferred-inactive-service identifier associated with the service-session profile for later activating a previously-configured at least one deferred-session-based service;

a deferred-active-service identifier created from the deferred-inactive-service identifier for indicating that the at least one deferred-session-based service is active; and

a service event generator for generating a service event on the service server to request activation of the at least one deferred-session-based service.

65. (New) In a data communication system including a plurality of network devices, a method for providing dynamic services comprising the steps of:

a cable modem termination system receiving from a cable modem a registration message, wherein the registration message includes parameters associated with a plurality of capabilities of the cable used for supporting at least one deferred-session-based service between a service

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server associated with the data communication system and a service device associated with the cable modem;

extracting the parameters from the registration message;

creating a service-session profile for the at least one deferred-session-based service, wherein the service-session profile includes one or more of the parameters;

using the service-session profile to configure the cable modem termination system and the service server for the at least one deferred-session-based service for activation at a later time;

associating the service-session profile with one or more deferred-inactive-medium-access-control-protocol-service identifiers, wherein the one or more deferred-inactive-medium-access-control-protocol-service identifiers are used by the service device to activate the at least one deferred-session-based service between the service server and the service device at the later time, and wherein the one or more deferred-inactive-medium-access-control-protocol-service identifiers are used by the service servers to generate events for requesting activation of the at least one deferred-session-based service; and

sending the one or more deferred-inactive-medium-access-control-protocol-service identifiers to the cable modem in a registration response message.

66. A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim 65.

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